

WHAT IS CLAIMED IS:

1. An X-ray diagnostic apparatus comprising:

a designating section which designates a region of interest on not less than one image of a plurality of X-ray diagnostic images forming a moving image, when continuously displayed, on the basis of an input from an operator;

a position estimating section which estimates corresponding areas on the remaining images of the plurality of images which correspond to the region of interest; and

an image processing section which shifts the region of interest and the respective corresponding areas to appropriate positions on the respective images.

2. The apparatus according to claim 1, wherein the plurality of X-ray diagnostic images are images acquired by rotation around an object to be examined.

3. The apparatus according to claim 1, wherein the corresponding region on each of the remaining images is determined on the basis of at least one of the designated region of interest, an angle of an imaging system corresponding to each image, a distance between an X-ray source and an X-ray detector image-receiving surface, and a detector size.

4. The apparatus according to claim 1, wherein when areas of interest are designated on not less than

two X-ray diagnostic images, said position estimating section obtains a 3D position of a diagnosis target on the basis of straight lines connecting focal positions of an X-ray source in sensing the respective images on which the areas of interest are designated and the areas of interest, and projects the 3D position onto the remaining images of the plurality of images, thereby estimating the respective corresponding areas.

5 5. The apparatus according to claim 1, wherein
10 when areas of interest are designated on not less than two X-ray diagnostic images, said position estimating section calculates a locus of the areas of interest in the moving image by using a function on the basis of the respective designated areas of interest, and
15 obtains the corresponding areas on the remaining images on the basis of the locus.

6. The apparatus according to claim 5, wherein said position estimating section includes an interface Which switches the function by manual operation.

20 7. The apparatus according to claim 5, wherein said position estimating section selects a function to be used in accordance with the number of areas of interest designated by an operator.

25 8. The apparatus according to claim 1, wherein said position estimation section performs correlation value computation associated with pixel values in the region of interest between not less than two adjacent

images of the plurality of X-ray diagnostic images, and obtains the corresponding areas on the respective remaining areas on the basis of the correlation values.

5 9. The apparatus according to claim 1, further comprising display range adjusting section which adjusts a display range of an X-ray diagnostic image after the shift processing by using a shutter having a predetermined shape.

10 10. The apparatus according to claim 9, wherein the predetermined shape can be set to an arbitrary shape.

11. An X-ray diagnostic apparatus comprising:
15 a memory which stores a plurality of 2D images forming a moving image of a predetermined diagnosis target when continuously displayed and a 3D image of the predetermined diagnosis target;

a designating section which allows an operator to designate a region of interest on the 3D image;

20 a position estimating section which estimates corresponding areas on the plurality of 2D images which correspond to the region of interest on the basis of a position of the region of interest designated on the 3D image; and

25 an image processing section which shifts the corresponding areas to appropriate positions on the respective 2D images.

12. The apparatus according to claim 11, wherein

the plurality of 2D images are images acquired by rotation around an object to be examined.

13. The apparatus according to claim 11, wherein each of the corresponding areas on the plurality of 2D
5 images is determined on the basis of at least one of the designated region of interest, an angle of an imaging system corresponding to each image, a distance between an X-ray source and an X-ray detector image-receiving surface, and a detector size.

10 14. The apparatus according to claim 11, further comprising display range adjusting section which adjusts a display range of a 2D image after the shift processing by using a shutter having a predetermined shape.

15 15. The apparatus according to claim 11, wherein the predetermined shape can be set to an arbitrary shape.

16. An image processor comprising:
a memory which stores a plurality of images
20 forming a moving image when continuously displayed;
a designating section which allows an operator to designate a region of interest on not less than one of the plurality of images;
a position estimating section which estimates
25 corresponding areas on the remaining images of the plurality of images on the basis of a position of the designated region of interest; and

an image processing section which shifts the region of interest and the respective corresponding areas to appropriate positions on the respective images.

5 17. The processor according to claim 16, wherein the plurality of images are images acquired by rotation around an object to be examined.

10 18. The processor according to claim 16, wherein said position estimating section calculates a locus of the region of interest on the moving image by using a function on the basis of the designated region of interest, and obtains the corresponding areas on the remaining image on the basis of the locus.

15 19. The processor according to claim 18, wherein said position estimating section includes an interface which switches the function by manual operation.

20 20. The processor according to claim 18, wherein said position estimating section selects a function to be used in accordance with the number of areas of interest designated by the operator.

25 21. The processor according to claim 16, wherein said position estimation section performs correlation value computation associated with pixel values in the region of interest between not less than two adjacent images of the plurality of X-ray diagnostic images, and obtains the corresponding areas on the respective remaining areas on the basis of the correlation values.

22. The processor according to claim 16, further comprising a display range adjusting filter which adjusts a display range of an image after the shift processing by using a shutter having a predetermined shape.

23. The processor according to claim 22, wherein the predetermined shape can be set to an arbitrary shape.

24. An image processor comprising:

10 a memory which stores a plurality of 2D images forming a moving image of a predetermined diagnosis target when continuously displayed, and a 3D image of the predetermined diagnosis target;

15 a designating section which allows an operator to designate a region of interest on the 3D image;

20 a position estimating section which estimates corresponding areas on the plurality of 2D images which correspond to the region of interest on the basis of a position of the region of interest designated on the 3D image; and

an image processing section which shifts the respective corresponding areas to appropriate positions on the respective 2D images.

25 25. The processor according to claim 24, wherein the plurality of 2D images are images acquired by rotation around an object to be examined.

26. The processor according to claim 24, wherein

each of the corresponding areas on the plurality of 2D
images is determined on the basis of at least one of
the designated region of interest, an angle of an
imaging system corresponding to each image, a distance
5 between an X-ray source and an X-ray detector
image-receiving surface, and a detector size.

27. The processor according to claim 24, further
comprising display range adjusting means for adjusting
a display range of a 2D image after the shift
10 processing by using a shutter having a predetermined
shape.

28. The processor according to claim 27, wherein
the predetermined shape can be set to an arbitrary
shape.